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ABSTRACT

One of seven career education programs chosen for nationwide dissemination by the Department of Health, Education, and Welfare's Joint Dissemination Review Panel (JDRP), the Developmental Career Guidance Project for grades K-12 is being conducted in Pima County, Arizona. For the years 1971-75, it received its funding primarily from the Arizona State Department of Education. Based on the Arizona Career Education Matrix, it covers seven areas: self-awareness, career awareness, decision making, employability skills, educational awareness, economic awareness, and appreciations and attitudes. At the elementary level, curriculum activities focus on self-awareness, self esteem, and an introduction to jobs; at the junior high level, on greater study of occupations and decision-making skills; and at the high school level, on student's exposure to work and work environments. A Community Resource Center was established in Tucson and coordinates community and parent involvement. To determine the project's effectiveness, a third-party evaluator administered a Careers Test to 2,500 students in grades 4-12, evenly divided between schools with high and low implementation of career education. An impressive difference was found between the test results of the two groups, indicating the effectiveness of the project in achieving its goals and recommending its replication elsewhere. (The review process that this and the other six projects underwent prior to JDRP submission and approval is described in CE 020 214-215.) (ELG)

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DEVELOPMENTAL CAREER GUIDANCE PROJECT

Pima County, Arizona

A Submission to the
Joint Dissemination Review Panel

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American Institutes for Research

30 June 1978

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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CE 020 221

PROGRAM AREA: CAREER EDUCATION

ACTIVITY TITLE, LOCATION: Developmental Career Guidance Project, Pima County, Arizona

DEVELOPED BY: Pima County, Arizona, Developmental Career Guidance Project

SOURCE AND LEVEL OF FUNDING:

1971-72:	$278,000	Arizona State Department of Education
1972-73:	500,000	Arizona State Department of Education
1973-74:	535,000	Arizona State Department of Education
1974-75:	560,135	Arizona State Department of Education
1974 :	10,000	Educational Professions Development Act

BRIEF DESCRIPTION OF ACTIVITY

The intervention is a set of activities across levels K-12, designed to help students develop knowledges and skills in the following areas: self-awareness and self-esteem; the world of work; and decision-making.

Goals

The goals of the Pima County Developmental Career Guidance Project are defined by the Arizona Career Education Matrix, developed and approved by the Arizona State Department of Education with the help of local district and school staffs. The matrix includes goal statements that are divided into seven categories. These categories are listed below along with example goal statements taken from four grade level groups (K-3 primary, 4-6 intermediate, 7-9 junior high, and 10-12 high school):

- Self-Awareness (junior high level): The students will consider their interests and aptitudes in exploring career information.
- Career Awareness (primary level): The students will become aware that people do different things at their work.
- Decision Making (intermediate level): The students will recognize the steps of the decision-making process.
- Employability Skills (high school level): The students will present an accurate description of education, training, experience, and information about themselves to potential employers through a variety of means such as interviews, tests, and application forms.
- Educational Awareness (junior high level): The students will understand the educational requirements needed for entry into occupations within selected career areas.
- Economic Awareness (primary level): The students will become familiar with the varied economic rewards gained from different kinds of work.
- Appreciations and Attitudes (high school level): The students, based on their tentative career choices, will analyze the interrelationship of work, continued learning, the arts, and leisure in achieving social responsibility and self-satisfaction.

Some of the seven categories are stressed more at one level than at others. In grades K-6, the building of self-awareness, self-esteem, and skill in decision-making is viewed as paramount, though awareness of career areas is not ignored. At the 7-9 level, occupational clusters are studied in more depth. Students are encouraged to examine their interests, continue developing their decision-making skills, and spend time thinking about and examining several potential career areas. At the 10-12 level, direct contact with selected career areas is provided, including

exposure to work, to workers, and to actual work experience.

Students' career development is influenced not only by what educators do, but also by what parents, employers, and community groups do. Therefore, the goals of Pima County's efforts also include increasing the involvement of these groups in career education and improving their effectiveness with students in whatever roles they may play.

Claims of Effectiveness

As a result of high levels of exposure to this career education program, a sample of students in grades 4-12 in the county performed better in all categories tested, as measured by a locally developed Careers Test, than did a comparable sample of students with low exposure to the program. The evidence presented to support this claim is from the school year 1974-75.

Description of Intervention Activities

The approach to career education in Pima County is often referred to as infusion. Infusion is not so much a change in the content of school subjects as in focus and intent. It involves the continual demonstration of the many relationships between school subjects and particular occupations, job clusters, or the world of work as a whole. For example, addition may be taught using restaurant checks in a simulated coffee shop instead of using blank paper. Because of the nature of infusion, and because of the wide array of career education resources that the Pima County project has made available for school staffs to choose among, the specific experiences that make up the program for any one student vary. A few examples may help the reader understand the nature of the program, but it should be remembered that these are representative examples, not universal student experiences.

Elementary level activities. Elementary level activities generally focus on self-awareness, self-esteem, and an introduction to jobs.

> Example: In one elementary school, a Care Center was instituted as a resource for all K-6 students. Records and record players, books, games, bulletin board materials, and other activities were available to help students learn about the two Themes of the Month, one concerning an occupational area and the other concerning an affective area. Example areas examined in one month were careers in the transportation cluster and problems in dealing with crisis situations (death, divorce, illness). Students used the Center both for class assignments and also independently to investigate careers and explore or express feelings. The Center staff, parent aides, or the school counselor were available at all times to work with students; also, students were encouraged to express their feelings in a Feelings Box, where they could insert notes telling their feelings and asking to talk to a staff member if they wished. The focus on each month's occupational cluster culminated in a full-day Career Day, with several speakers coming in to discuss their careers.

Junior high level activities. Activities at the 7-9 level focus on greater study of occupations and application of decision-making skills.

> Example: In one 8th grade class, a unit on occupations required students to complete a notebook consisting of values clarification, decision-making, and job exploration exercises. Examples of exercises were: (1) a values-appraisal exercise in which students rated (on a 1 to 10 scale) activities of importance to them individually; (2) a job interest exercise where students checked which of 10 activities under various job clusters they would rather perform; (3) an Occupational Study Guide asking students specific questions concerning the job(s) of their choice; (4) a data-

people-things exercise where students selected a response representing one of these preferences in 20 situations; (5) a jobs decision making exercise where students listed 10 careers of interest together with characteristics of each career (education required, whether it involved other people or not, risk factor, preferred size of organization, and other factors of the student's choice); (6) a What I Like About Me exercise where students chose which of 60 positive attributes described them; and (7) a Where I Want To Be Ladder where students forecasted which of their desires in life they might fulfill in five years or in their lifetimes.

Senior high level activities. Activities at the 10-12 levels are aimed at giving students actual exposure to work and work sites.

Example: A communications laboratory of one high school was the center of radio/TV/film/newspaper activities on campus. Students learned basic technical skills in one or more of these areas and then produced their own films, broadcasts, and newspaper. This involved covering campus and community activities, interviewing people on and off campus, visiting local TV and radio stations and newspapers to observe and participate in a real setting, and preparing original material (such as a videotaped spoof of television advertising).

These examples portray large-scale efforts which have been undertaken during the Pima County effort. However, smaller connections made day-to-day between school and work are even more common. The example given earlier of doing addition on restaurant checks rather than blank paper is illustrative.

Project staffing. Career education in the county is coordinated and facilitated by the Pima County Developmental Career Guidance Project. Project policies are set by an 11-person governing Board consisting of one official from each of 11 participating school districts, operating under an interjurisdictional agreement. The staff consists of four teams of persons working out of separate offices serving different county areas. The central office in Tucson is run by the project director and staffed by guidance specialists and support staff. The three area offices, each located in a small district outside of Tucson, are each headed by an assistant director and staffed by guidance specialists plus a small support staff.

Guidance specialists. The "front line" persons in the Pima County effort as implemented in 1974-75 were the project's guidance specialists. Persons chosen as guidance specialists generally had advanced degrees in counseling plus commitment to and enthusiasm for career education. In 1974-75 they were usually assigned three to four schools apiece, visiting each on a weekly basis. Numbering about 30 in that school year, guidance specialists were chiefly responsible for helping teachers and counselors infuse career education and career guidance activities into the classroom. Through workshops, in-service sessions, and individual consultation they strove to impart to teachers and counselors an understanding of Pima County goals of career education and the nature of the infusion process; to acquaint them with career education media and methods for their use; to help them plan the use of guest speakers, field trips, and other community resources; and to help them integrate guidance activities into the classroom. Often the guidance specialists conducted these activities themselves, particularly at the elementary level; in fact, the degree of project staff involvement directly in the classroom when compared to other infusion approaches to career education across the country is a significant feature of this project.

Staff relationships. Cooperation between the project staff and staffs of the 11 participating districts is another notable feature of this program. Districts offer support to the project in many ways, such as supplying space for offices and workshops and sharing salary costs of some staff members. In addition, the Board

distributes project funds in part on the basis of district needs instead of on a strict per-pupil basis, allowing smaller districts to maintain resources comparable to those maintained by larger districts.

Cooperation among groups involved in this project extends also to contacts between project staff and building staff. Project services are offered throughout the county, coordinated by the central office and three area offices. However, no school or teacher is required to use project services, and in fact project staff will not begin work in a school unless both the principal and a majority of the teachers request it. Use of project services has spread from six schools initially in 1971-72 to virtually all county schools in 1977-78. This appears to be because students, parents, teachers, and administrators have learned of the project's intriguing activities and impressive results in other schools and have asked for project staff involvement in their schools.

Community Resource Center. One of the project's major activities is its Community Resource Center, located at the central Tucson office. The three full-time Center staff members coordinate a wide range of contacts between the schools and the community, including guest speakers, parent volunteers, summer businessman/teacher seminars, and work exposure/experience sites for students. The Center's Community Resource Advisory Council consists of 18 community members who work with Center staff members to increase community involvement in career education. The effort has been aimed at including parents, community organizations, and all segments of the world of work as collaborators in education, who bring their own unique and varied contributions and viewpoints, not merely supplementers who do what educators tell them to do. Business and community group members act as speakers, resource persons, and work exposure/experience site hosts, under overall coordination by the Community Resource Center and its Advisory Council. In addition, these people participate in seminars and work exposure activities for teachers and counselors as part of the latter's in-service training.

Involvement of parents is a particular focus of the project through the Community Resource Center. Experiences offered at the Center include discussion groups on career education and on effective parenting, leadership training, and opportunities to participate in school activities as teacher aides, speakers, or resource persons. Project staff members are fully cognizant of the fact that parental expectations influence students' career selections substantially. Staff members work to increase participation in the on-going parent groups each year.

Career education media. Another major project resource is its extensive collection of career education media, located at all four offices and available to all county teachers and counselors. The project constantly maintains and updates an extensive library of career education media and materials for use by all Pima County teachers, including commercially published materials and 24 project-developed instructional units. Its Media Advisory Committee, made up of teachers, counselors, and project staff members representing different county areas, carefully screens all incoming materials for effectiveness and absence of race or sex bias; the Committee's recommendations are valuable for local school purchasing decisions as well as project decisions. These materials, speakers, and activity units have been available for all local school personnel to select from according to the needs of their students.

Inservice training. Inservice programs for teachers and counselors consist of regular one-hour after-school sessions conducted by guidance specialists, held at least once a month. Special sessions to help teachers and counselors develop or tailor materials to their students' needs are held whenever requested. In addition, special topic workshops are held several times a year county-wide or for individual districts, coordinated by the project's two staff development specialists. Teachers and counselors are also encouraged to take relevant college course work.

Context

Pima County is a highly diversified area, containing one of Arizona's major cities (Tucson) and also large stretches of farm land and Indian reservation land. Its population is about 80% white and 20% Mexican-American, American Indian, and other ethnic minorities. In general, whites tend to live in the urban portions and minorities tend to live in the more rural areas.

The county contains a total of 155 schools: 104 elementary schools, 34 junior high schools, and 17 senior high schools. The total number of students in the county is about 93,000.

Intended Users and Beneficiaries

The primary users and beneficiaries of the program are the K-12 students themselves. Project staff believe that students will benefit from the program by being enabled to better plan their school course work and activities around areas of career interest; to better develop post-high school plans best suited to their career aspirations; and, in the long run, to choose more appropriate careers and lead more satisfying lives than students without such experiences.

Subsidiary benefits are also believed to accrue to the school and community (including parents, teachers, and community group members) who become more familiar with each other's roles and more effective in their relationships to each other and to K-12 students.

Student Characteristics

The students in schools served by the Pima County project formed a cross-section of K-12 students county-wide. The student population was approximately 20% minority, primarily Mexican-American but also American Indian, Black, and other minorities. The students represented all socioeconomic levels and came from settings ranging from heavily urbanized (though no portion of Tucson could be characterized as "inner-city" in the usual sense) to extremely rural.

Salient Features

The central features of this effort are:

- its emphasis on refocusing the county's entire approach to education to demonstrate the relevance of education and work. To achieve this end, large numbers of activities are used and a wide array of career education resources for all levels is offered; and
- its use of specially trained guidance specialists who can keep abreast of career education resources and implementation methods.

Costs

The costs of adopting this program can be estimated from the costs of project operation in 1974-75. The breakdown of costs for 1974-75 is as follows:

Personnel	$403,924
Personnel training	2,000
Supplies and equipment	35,307
Consumables	3,200
Other (contractual services, travel, miscellaneous)	115,704
Total	$506,135

In 1974-75, about 75,000 students were served by project staff, resulting in a per pupil cost estimate of about $6.75.

EVIDENCE OF EFFECTIVENESS

Evaluator

Behavioral Research Associates of Tucson, Arizona, developed the student outcome instrument during 1972-73 and conducted formal evaluations of the program in subsequent years.

Interpretability of Measures

Behavioral Research Associates developed, pilot tested, and field tested a "Careers Test" to measure effectiveness of the program. In 1974-75, the test had two forms, an elementary-intermediate form for students in grades 4-7 and a secondary form for students at the 8-12 levels. In addition to questions seeking information about students' background and home environment, the 4-7 level test contained 49 items, while the 8-12 level test had 82 items.

Both forms of the Careers Test were paper-and-pencil instruments. Both covered the seven categories of the Arizona Career Education matrix already discussed (except for the employability skills category at the elementary level). In addition to scales in each of these areas, two other scales were included: a measure of cumulative knowledge in nine career clusters, and (at the secondary level) a measure of interest in those nine clusters. All category scores consist of percent of items answered correctly out of all items in that scale, so that a perfect score equals 100.

Validity and Reliability

Content validity has been verified by frequent review by state, county, project, and local district staff. Reliability of the test was estimated by correlation of test/retest scores of 100 students tested at each of the two levels with a two-to-three month separation between tests. Scores in the seven categories were correlated .70 to .90 from one administration to the next.

Credibility of Evidence

Behavioral Research Associates conducted two to three hours of training with each guidance specialist to make sure that test administration was standardized. All testing was conducted by the guidance specialists. Data were checked, analyzed, and interpreted by the evaluators.

Evidence of Impact

Evaluation design. The 1974-75 evaluation utilized a posttest only, treatment/control group design. The 1974-75 school year presented the last opportunity to find enough schools in the county to create a plausible control group. After that school year, most schools in the county were receiving project services. In February and early March of 1975, the guidance specialists used information from their weekly logs to assess the degree of implementation of career education in all district schools. Based on this information, schools were divided into high, medium, and low implementation groups. A strictly no-implementation group was precluded because constant teacher and principal transfers among county schools had left almost no "career education-free" schools. The 26 schools in the high implementation group contained the treatment population and the 25 schools in the low implementation group contained the control population. Approximately 10 percent of the county's schools received services tailored to non-English-speaking students who were heavily concentrated in rural areas. It should be noted that these schools were

not included in this study in either the treatment or the control group because of their special character.

Sample selection. Student sampling was done by random selection of intact classes. A list of all teachers' names from the high and low implementation schools was compiled. Student samples were constructed by randomly selecting fifty teachers' names in each group and designating their students as members of the treatment and control groups. Twenty-five teachers each were selected at the 4-7 level and the same number was selected at the 8-12 level. The total number of high-exposure students actually tested at the 4-7 level was about 550, with an equal number of low-exposure students tested; almost 700 high-exposure and 700 low-exposure students were tested at the 8-12 level.

The numbers of schools, teachers, and students actually participating in the evaluation are summarized in Table 1.

Table 1

Numbers of Schools, Teachers, and Students Participating in the Evaluation

	No. of Schools		No. of Classes		Total	Approximate No. of Students		Total
	Grades 4-7	Grades 8-12	Grades 4-7	Grades 8-12		Grades 4-7	Grades 8-12	
High Implementation Group	17	9	22	25	47	550	700	1,250
Low Implementation Group	17	8	23	25	48	550	700	1,250
Total	34	17	45	50	95	1,100	1,100	2,500

Comparability of samples. Tables 2 and 3 contain the results of analyses that were conducted to estimate the degree of comparability of the high and low exposure groups on dimensions other than amount of services received from the Pima County program staff.

Table 2

Characteristics of Teachers in Sampled Classes

	Average Teacher Age	Average Education	Average Teaching Experience	Ethnicity	Sex
High Implementation Group (N = 47)	33.9 yrs.	B.A. + 28.7 units	9.7 years	30% minority	41 female 6 male
Low Implementation Group (N = 48)	34.2 yrs.	B.A. + 29.1 units	9.8 years	27% minority	41 female 7 male

Table 3

Characteristics of Students in Sampled Classes

	Average School Reading Scores for Grade 4*	Average School Listening Scores for Grade 4*
High Implementation (N=16)	2.9	3.1
Low Implementation (N=17)	3.1	3.4

*Stanford Achievement Test administered to third graders in 1973-74. Scores reported in Grade Equivalents using publisher's norms.

These data suggest that the high and low exposure classes do not differ systematically on any educational dimensions likely to cause differences on the Careers Test.

Data analyses. T-tests were computed at each level (4-7 and 8-12) on each career education category of the Careers Test. Some categories were made up of sub-categories; in these cases, comparisons were done on the sub-categories instead of the total categories. Results are shown in Table 4. Calculated t-values are shown together with their significance levels (to .001 mininum). Student scores shown represent mean percentage of items correct on that category or sub-category. All comparisons at every grade level favored the high-exposure students; 19 of 20 comparisons favored the high-exposure students at the .001 level of significance, with the remaining comparison favoring them at the .02 level of significance.

The self-awareness category is not measured directly by the test. However, items in the 1974-75 test did measure student perceptions of: (1) their readiness for employment in each of the nine clusters; (2) self-perceived brightness in relationship to other students; (3) self-expectations for scholastic performance; and (4) differences in certainty of achieving educational and occupational aspirations. While these self-report data are rather "soft" in character, it is noteworthy that on every comparison made at each level, high-exposure students rated themselves higher than did low-exposure students, indicating a higher degree of self-confidence.

Evidence of Statistical Reliability of Effects

Data in Tables 2 and 3 demonstrate that neither teacher effects nor pre-existing differences in the student groups are likely explanations of the above results.

Further evidence is provided by test results obtained in subsequent years. In both 1975-76 and 1976-77, results continue to show the superiority of high-exposure students on the Careers Test. Even though low-exposure students were presumably receiving more career education as project activities increased over those years, the differences between groups remain impressive. In 1975-76, 19 of 20 comparisons favor the treatment group at the .05 level of significance. In 1976-77, 17 of the 20 comparisons favor the treatment group. Twenty-six of these 40 comparisons over the two years favor the treatment group at the .01 level or beyond.

Evidence that effects are educationally meaningful. The evaluation data developed and presented in 1974-75 consisted of numbers of students tested, mean percentages of items correct, t-ratios, and significance levels. At this writing, more detailed data are no longer available; therefore, size of differences between groups in standard deviation terms cannot be given. Educational significance is better judged instead on other factors. These are: (1) the importance of the seven categories; (2) the modest cost of implementing this program relative to the number of students served; and (3) the enthusiasm of project and school staff and members of the recipient communities. It is noteworthy that in at least 30 schools, school officials who were reluctant to make use of project services (because of concern for their overburdened teachers and other staff members, fears of increased costs, or simple resistance to change) were prodded into action by parents, teachers, and counselors. Such enthusiasm certainly demonstrates the program's perceived importance within the local community.

Table 4

Mean Percentage of Items Correct on the Careers Test, t-Ratios, and Significance Levels

	# of items	High Exposure Sample (N = 550)	Low Exposure Sample (N = 550)	t	Significance Level
Elementary/Intermediate Students (grades 4-7)					
Educational Awareness	5	51.8	48.9	2.17	<.020
Career Awareness: Knowledge of Skills Required	5	61.1	56.6	3.05	<.001
Career Awareness: Knowledge of Factors Contributing to Job Satisfaction	5	57.7	53.3	3.19	<.001
Career Awareness: Common Threads in Jobs	5	73.0	63.9	5.88	<.001
Economic Awareness	2	59.9	54.5	3.51	<.001
Decision Making	5	68.2	60.0	5.70	<.001
Appreciations and Attitudes	5	65.7	58.8	4.46	<.001
Knowledge of Career Clusters Score	9	57.4	48.3	6.69	<.001
Secondary Students (grades 8-12)		(N = 700)	(N = 700)		
Educational Awareness	4	53.7	42.0	6.42	<.001
Career Awareness: Knowledge of Skills Required	7	62.1	50.0	7.08	<.001
Career Awareness: Knowledge of Factors Contributing to Job Satisfaction	7	69.3	55.6	6.91	<.001
Career Awareness: Common Threads in Jobs	7	70.6	57.6	6.34	<.001
Economic Awareness: Economic Awareness	4	58.6	47.1	5.64	<.001
Economic Awareness: Awareness of Career Mobility	4	45.5	35.4	5.11	<.001
Economic Awareness: Awareness of Factors Influencing Occupational Structure	5	59.0	47.4	5.79	<.001
Decision Making	6	39.7	32.7	4.82	<.001
Employability Skills*	9	27.5	22.4	8.06	<.001
Appreciations and Attitudes	4	59.0	47.4	5.92	<.001
Knowledge of Career Clusters Score	9	43.0	3i.6	7.19	<.001
Interest in Career Clusters Score**	9	25.7	24.0	3.86	<.001

*proportion of students indicating "very well prepared" for entering clusters
**proportion of students indicating "very interested" in entering clusters

Evidence that the effects are attributable to the intervention. It has already been shown that the high and low implementation groups were very similar on a number of dimensions that if dissimilar might have provided alternative explanations for the obtained, between-group differences. Additional evidence that the Pima program was responsible for differences in student performance lies in the fact that all schools in the high and low implementation groups were formally eligible to obtain project services. As mentioned earlier, this was due in part to the lack of a true "no-exposure" group with which to compare high-exposure students. But it also helped ensure that results were not due to systematic differences in schools whose staff volunteered to participate in the evaluation.

Evidence of generalizability to populations for which the intervention is intended. It can be confidently stated that this program is effective with a student population made up of approximately 80% white students and 20% Mexican-American, American Indian, and other minority students. The positive evidence of effectiveness presented for 1974-75, borne out by similar results found in later years but not reported here, supports the claim that this program would give excellent results when replicated with a similar group of students. Since evaluation results are reported only for grade levels 4-12, the evidence is not generalizable to grades K-3.